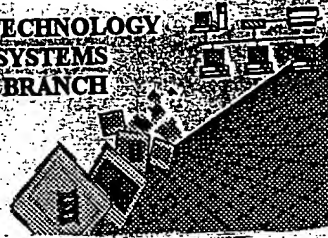




BIOTECHNOLOGY  
SYSTEMS  
BRANCH



0590  
1105

## **RAW SEQUENCE LISTING ERROR REPORT**

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 09/940,316  
Source: CIPE  
Date Processed by STIC: 11/20/02

**THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.**

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**FOR CRF SUBMISSION QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.**

**FOR SEQUENCE RULES INTERPRETATION, PLEASE CONTACT ROBERT WAX, 703-308-4216.**

**PATENTIN 2.1 e-mail help: [patin21help@uspto.gov](mailto:patin21help@uspto.gov) or phone 703-306-4119 (R. Wax)**

**PATENTIN 3.0 e-mail help: [patin3help@uspto.gov](mailto:patin3help@uspto.gov) or phone 703-306-4119 (R. Wax)**

**TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 3.1 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:**

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Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<<http://www.uspto.gov/ebc/efs/downloads/documents.htm>>), EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: U.S. Patent and Trademark Office, Box Sequence, P.O. Box 2327, Arlington, VA 22202
3. Hand Carry directly to:  
U.S. Patent and Trademark Office, Technology Center 1600, Reception Area, 7<sup>th</sup> Floor, Examiner Name, Sequence Information, Crystal Mall One, 1911 South Clark Street, Arlington, VA 22202  
Or  
U.S. Patent and Trademark Office, Box Sequence, Customer Window, Lobby, Room 1B03, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202
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Revised 01/29/2002



OIPE

Does Not Comply  
Corrected Filing Needed

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002  
TIME: 11:24:10

Input Set : D:\30062-20026.txt  
Output Set: N:\CRF4\11192002\I940316.raw

3 <110> APPLICANT: KOSAN BIOSCIENCES, Inc.  
4 REEVES, CHRISTOPHER  
5 CHU, DANIEL  
6 KHOSLA, CHAITAN  
7 SANTI, DANIEL  
8 WU, KAI  
10 <120> TITLE OF INVENTION: POLYKETIDES ENCODING THE fkba GENE OF THE FK-520 POLYKETIDE  
SYNTHASE  
11 GENE CLUSTER  
13 <130> FILE REFERENCE: 30062-20026.11  
15 <140> CURRENT APPLICATION NUMBER: 09/940,316  
C--> 16 <141> CURRENT FILING DATE: 2002-11-01  
18 <150> PRIOR APPLICATION NUMBER: 09/410,551  
19 <151> PRIOR FILING DATE: 1999-10-01  
21 <150> PRIOR APPLICATION NUMBER: US 60/139,650  
22 <151> PRIOR FILING DATE: 1999-06-17  
24 <150> PRIOR APPLICATION NUMBER: US 60/123,810  
25 <151> PRIOR FILING DATE: 1999-03-11  
27 <150> PRIOR APPLICATION NUMBER: US 60/102,748  
28 <151> PRIOR FILING DATE: 1998-10-02  
30 <160> NUMBER OF SEQ ID NOS: 72  
32 <170> SOFTWARE: FastSEQ for Windows Version 4.0

The type of errors shown exist throughout  
the Sequence Listing. Please check subsequent  
sequences for similar errors

↑  
Amino numbers:  
some digits missing  
↓ throughout

#### ERRORED SEQUENCES

3245 <210> SEQ ID NO: 17  
3246 <211> LENGTH: 1488  
3247 <212> TYPE: PRT  
3248 <213> ORGANISM: Artificial Sequence  
3250 <220> FEATURE:  
3251 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic PKS  
3252 synthase fragment  
3254 <400> SEQUENCE: 17  
3255 Ile Trp Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr  
3256 1 5 10 15  
3258 Ala Ala Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala  
3259 20 25 30  
3261 Ala Phe Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg  
3262 35 40 45  
3264 Asn Ala Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val  
3265 50 55 60  
3267 Phe Asp Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu  
3268 65 70 75 80

## RAW SEQUENCE LISTING

DATE: 11/20/2002

PATENT APPLICATION: US/09/940,316

TIME: 11:24:10

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

3417 Ile Gln Ala Ala Ile Gly Ala Leu Ala His Leu Tyr Val Asn Gly Val  
 3418 865 870 875 880  
 3420 Thr Val Asp Trp Pro Ala Leu Leu Gly Asp Ala Pro Ala Thr Arg Val  
 3421 885 890 895  
 3423 Leu Asp Leu Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu  
 3424 900 905 910  
 3426 Ser Ala Arg Pro Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly Ser  
 3427 915 920 925  
 3429 Gly Ile Ala Leu Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser Val  
 3430 930 935 940  
 3432 Pro Thr Gly Ala Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu Ala  
 3433 945 950 955 960  
 3435 Ala Ala Asp Ala Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile Ala  
 3436 965 970 975  
 3438 Ser Val Pro Gly Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr Trp  
 3439 980 985 990  
 3441 Val Asp Glu Pro Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His Thr  
 3442 995 1000 1005  
 3444 Arg Thr Gly Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg  
 3445 1010 1015 1020  
 3447 Pro His Gly Thr Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro  
 E--> 3448 1025 1030 1035 104  
 3450 Pro Gly Ala Val Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg Gly  
 3451 1045 1050 1055  
 3453 Asp Gln Val Phe Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe Val  
 3454 1060 1065 1070  
 3456 Val His Pro Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly  
 3457 1075 1080 1085  
 3459 Ser Arg Gln Pro Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser Asp  
 3460 1090 1095 1100  
 3462 Ala Thr Val Leu Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala Met  
 E--> 3463 1105 1110 1115 112  
 3465 Gly Phe Ala Ala Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala Glu  
 3466 1125 1130 1135  
 3468 Ala Val Thr Leu Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu Ser  
 3469 1140 1145 1150  
 3471 Asp Gly Leu His Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val Tyr  
 3472 1155 1160 1165  
 3474 Asp Gly Asp Leu Pro Glu Gly His Val Leu Ile Thr Ala Ala His Pro  
 3475 1170 1175 1180  
 3477 Asp Asp Pro Glu Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr Arg  
 E--> 3478 1185 1190 1195 120  
 3480 Val Leu Thr Ala Leu Gln His His Leu Thr Thr Thr Asp His Thr Leu  
 3481 1205 1210 1215  
 3483 Ile Val His Thr Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly Leu  
 3484 1220 1225 1230  
 3486 Thr Arg Thr Ala Gln Asn Glu His Pro His Arg Ile Arg Leu Ile Glu  
 3487 1235 1240 1245  
 3489 Thr Asp His Pro His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:10

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

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3490      1250      1255      1260
3492 Asp His Pro His Leu Arg Leu Thr His His Thr Leu His His Pro His
E--> 3493 265      1270      1275      128
3495 Leu Thr Pro Leu His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn
3496      1285      1290      1295
3498 Pro Glu His Ala Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly
3499      1300      1305      1310
3501 Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr Leu Leu Ser Arg
3502      1315      1320      1325
3504 Thr Pro Pro Pro Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp Val
3505      1330      1335      1340
3507 Gly Asp Pro His Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln Pro
E--> 3508 345      1350      1355      136
3510 Leu Thr Ala Ile Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu
3511      1365      1370      1375
3513 His Ala Leu Thr Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys Ala
3514      1380      1385      1390
3516 Asn Ala Ala Trp His Leu His His Leu Thr Gln Asn Gln Pro Leu Thr
3517      1395      1400      1405
3519 His Phe Val Leu Tyr Ser Ser Ala Ala Ala Val Leu Gly Ser Pro Gly
3520      1410      1415      1420
3522 Gln Gly Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr
E--> 3523 425      1430      1435      144
3525 His Arg His Thr Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly Met
3526      1445      1450      1455
3528 Trp His Thr Thr Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg
3529      1460      1465      1470
3531 Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
3532      1475      1480      1485
3932 <210> SEQ ID NO: 19
3933 <211> LENGTH: 1517
3934 <212> TYPE: PRT
3935 <213> ORGANISM: Artificial Sequence
3937 <220> FEATURE:
3938 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic PKS
3939      synthase fragment
3941 <400> SEQUENCE: 19
3942 Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr Ala Ala
3943      1      5      10      15
3945 Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala Ala Phe
3946      20      25      30
3948 Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg Asn Ala
3949      35      40      45
3951 Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val Phe Asp
3952      50      55      60
3954 Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu Leu Thr
3955      65      70      75      80
3957 Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala Gly Ala
3958      85      90      95

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RAW SEQUENCE LISTING  
 PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002  
 TIME: 11:24:10

Input Set : D:\30062-20026.txt  
 Output Set: N:\CRF4\11192002\I940316.raw

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4107 Asp Val Val Thr Val Ala Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr
4108                               885                               890                               895
4110 Arg Met Leu Thr Ala Leu Ala Gln Ala Tyr Val His Gly Val Thr Val
4111                               900                               905                               910
4113 Asp Trp Pro Ala Ile Leu Gly Thr Thr Thr Thr Arg Val Leu Asp Leu
4114                               915                               920                               925
4116 Pro Thr Tyr Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Arg
4117                               930                               935                               940
4119 Pro Ala Ala Ser Asp Ala Gly His Pro Val Leu Gly Ser Gly Ile Ala
4120 945                               950                               955                               960
4122 Leu Ala Gly Ser Pro Gly Arg Val Phe Thr Gly Ser Val Pro Thr Gly
4123                               965                               970                               975
4125 Ala Asp Arg Ala Val Phe Val Ala Glu Leu Ala Leu Ala Ala Ala Asp
4126                               980                               985                               990
4128 Ala Val Asp Cys Ala Thr Val Glu Arg Leu Asp Ile Ala Ser Val Pro
4129                               995                               1000                               1005
4131 Gly Arg Pro Gly His Gly Arg Thr Thr Val Gln Thr Trp Val Asp Glu
4132 1010                               1015                               1020
4134 Pro Ala Asp Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Thr Gly
E--> 4135 025                               1030                               1035                               1040
4137 Asp Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro His Gly
4138                               1045                               1050                               1055
4140 Thr Ala Leu Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro Pro Gly Ala
4141                               1060                               1065                               1070
4143 Val Pro Ala Asp Gly Leu Pro Gly Val Trp Arg Arg Gly Asp Gln Val
4144                               1075                               1080                               1085
4146 Phe Ala Glu Ala Glu Val Asp Gly Pro Asp Gly Phe Val Val His Pro
4147 1090                               1095                               1100
4149 Asp Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln
E--> 4150 105                               1110                               1115                               1120
4152 Pro Ala Gly Trp Arg Asp Leu Thr Val His Ala Ser Asp Ala Thr Val
4153                               1125                               1130                               1135
4155 Leu Arg Ala Cys Leu Thr Arg Arg Thr Asp Gly Ala Met Gly Phe Ala
4156                               1140                               1145                               1150
4158 Ala Phe Asp Gly Ala Gly Leu Pro Val Leu Thr Ala Glu Ala Val Thr
4159                               1155                               1160                               1165
4161 Leu Arg Glu Val Ala Ser Pro Ser Gly Ser Glu Glu Ser Asp Gly Leu
4162 1170                               1175                               1180
4164 His Arg Leu Glu Trp Leu Ala Val Ala Glu Ala Val Tyr Asp Gly Asp
E--> 4165 185                               1190                               1195                               1200
4167 Leu Pro Glu Gly His Val Leu Ile Thr Ala Ala His Pro Asp Asp Pro
4168                               1205                               1210                               1215
4170 Glu Asp Ile Pro Thr Arg Ala His Thr Arg Ala Thr Arg Val Leu Thr
4171                               1220                               1225                               1230
4173 Ala Leu Gln His His Leu Thr Thr Thr Asp His Thr Leu Ile Val His
4174                               1235                               1240                               1245
4176 Thr Thr Thr Asp Pro Ala Gly Ala Thr Val Thr Gly Leu Thr Arg Thr
4177 1250                               1255                               1260
4179 Ala Gln Asn Glu His Pro His Arg Ile Arg Leu Ile Glu Thr Asp His

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## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:10

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

E--> 4180 265          1270          1275          1280
4182 Pro His Thr Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu Asp His Pro
4183          1285          1290          1295
4185 His Leu Arg Leu Thr His His Thr Leu His His Pro His Leu Thr Pro
4186          1300          1305          1310
4188 Leu His Thr Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn Pro Glu His
4189          1315          1320          1325
4191 Ala Ile Ile Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala
4192          1330          1335          1340
4194 Arg His Leu Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro
E--> 4195 345          1350          1355          1360
4197 Pro Asp Ala Thr Pro Gly Thr His Leu Pro Cys Asp Val Gly Asp Pro
4198          1365          1370          1375
4200 His Gln Leu Ala Thr Thr Leu Thr His Ile Pro Gln Pro Leu Thr Ala
4201          1380          1385          1390
4203 Ile Phe His Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu His Ala Leu
4204          1395          1400          1405
4206 Thr Pro Asp Arg Leu Thr Thr Val Leu His Pro Lys Ala Asn Ala Ala
4207          1410          1415          1420
4209 Trp His Leu His His Leu Thr Gln Asn Gln Pro Leu Thr His Phe Val
E--> 4210 425          1430          1435          1440
4212 Leu Tyr Ser Ser Ala Ala Ala Val Leu Gly Ser Pro Gly Gln Gly Asn
4213          1445          1450          1455
4215 Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His
4216          1460          1465          1470
4218 Thr Leu Gly Gln Pro Ala Thr Ser Ile Ala Trp Gly Met Trp His Thr
4219          1475          1480          1485
4221 Thr Ser Thr Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg Asp Arg Ile
4222          1490          1495          1500
4224 Arg Arg Gly Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
E--> 4225 505          1510          1515
4615 <210> SEQ ID NO: 21
4616 <211> LENGTH: 1482
4617 <212> TYPE: PRT
4618 <213> ORGANISM: Artificial Sequence
4620 <220> FEATURE:
4621 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic PKS
4622      synthase fragment
4624 <400> SEQUENCE: 21
4625 Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr Ala Ala
4626 1          5          10          15
4628 Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala Ala Phe
4629          20          25          30
4631 Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg Asn Ala
4632          35          40          45
4634 Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val Phe Asp
4635          50          55          60
4637 Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu Leu Thr
4638 65          70          75          80

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## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:10

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

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4787 Ala Leu Ala His Leu Tyr Val Asn Gly Val Thr Val Asp Trp Pro Ala
4788 865 870 875 880
4790 Leu Leu Gly Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro Thr Tyr
4791 885 890 -895
4793 Ala Phe Gln His Gln Arg Tyr Trp Leu Glu Ser Ala Arg Pro Ala Ala
4794 900 905 910
4796 Ser Asp Ala Gly His Pro Val Leu Gly Ser Gly Ile Ala Leu Ala Gly
4797 915 920 925
4799 Ser Pro Gly Arg Val Phe Thr Gly Ser Val Pro Thr Gly Ala Asp Arg
4800 930 935 940
4802 Ala Val Phe Val Ala Glu Leu Ala Leu Ala Ala Asp Ala Val Asp
4803 945 950 955 960
4805 Cys Ala Thr Val Glu Arg Leu Asp Ile Ala Ser Val Pro Gly Arg Pro
4806 965 970 975
4808 Gly His Gly Arg Thr Thr Val Gln Thr Trp Val Asp Glu Pro Ala Asp
4809 980 985 990
4811 Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Thr Gly Asp Ala Pro
4812 995 1000 1005
4814 Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro His Gly Thr Ala Leu
4815 1010 1015 1020
4817 Pro Asp Ala Ala Asp Ala Glu Trp Pro Pro Pro Gly Ala Val Pro Ala
E--> 4818 025 1030 1035 1040
4820 Asp Gly Leu Pro Gly Val Trp Arg Arg Gly Asp Gln Val Phe Ala Glu
4821 1045 1050 1055
4823 Ala Glu Val Asp Gly Pro Asp Gly Phe Val Val His Pro Asp Leu Leu
4824 1060 1065 1070
4826 Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Ala Gly
4827 1075 1080 1085
4829 Trp Arg Asp Leu Thr Val His Ala Ser Asp Ala Thr Val Leu Arg Ala
4830 1090 1095 1100
4832 Cys Leu Thr Arg Arg Thr Asp Gly Ala Met Gly Phe Ala Ala Phe Asp
E--> 4833 105 1110 1115 1120
4835 Gly Ala Gly Leu Pro Val Leu Thr Ala Glu Ala Val Thr Leu Arg Glu
4836 1125 1130 1135
4838 Val Ala Ser Pro Ser Gly Ser Glu Glu Ser Asp Gly Leu His Arg Leu
4839 1140 1145 1150
4841 Glu Trp Leu Ala Val Ala Glu Ala Val Tyr Asp Gly Asp Leu Pro Glu
4842 1155 1160 1165
4844 Gly His Val Leu Ile Thr Ala Ala His Pro Asp Asp Pro Glu Asp Ile
4845 1170 1175 1180
4847 Pro Thr Arg Ala His Thr Arg Ala Thr Arg Val Leu Thr Ala Leu Gln
E--> 4848 185 1190 1195 1200
4850 His His Leu Thr Thr Thr Asp His Thr Leu Ile Val His Thr Thr Thr
4851 1205 1210 1215
4853 Asp Pro Ala Gly Ala Thr Val Thr Gly Leu Thr Arg Thr Ala Gln Asn
4854 1220 1225 1230
4856 Glu His Pro His Arg Ile Arg Leu Ile Glu Thr Asp His Pro His Thr
4857 1235 1240 1245
4859 Pro Leu Pro Leu Ala Gln Leu Ala Thr Leu Asp His Pro His Leu Arg

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## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:10

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

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4860      1250      1255      1260
4862 Leu Thr His His Thr Leu His His Pro His Leu Thr Pro Leu His Thr
E--> 4863 265      1270      1275      1280
4865 Thr Thr Pro Pro Thr Thr Thr Pro Leu Asn Pro Glu His Ala Ile Ile
4866      1285      1290      1295
4868 Ile Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu
4869      1300      1305      1310
4871 Asn His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Asp Ala
4872      1315      1320      1325
4874 Thr Pro Gly Thr His Leu Pro Cys Asp Val Gly Asp Pro His Gln Leu
4875      1330      1335      1340
4877 Ala Thr Thr Leu Thr His Ile Pro Gln Pro Leu Thr Ala Ile Phe His
E--> 4878 345      1350      1355      1360
4880 Thr Ala Ala Thr Leu Asp Asp Gly Ile Leu His Ala Leu Thr Pro Asp
4881      1365      1370      1375
4883 Arg Leu Thr Thr Val Leu His Pro Lys Ala Asn Ala Ala Trp His Leu
4884      1380      1385      1390
4886 His His Leu Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser
4887      1395      1400      1405
4889 Ser Ala Ala Ala Val Leu Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala
4890      1410      1415      1420
4892 Ala Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His Thr Leu Gly
E--> 4893 425      1430      1435      1440
4895 Gln Pro Ala Thr Ser Ile Ala Trp Gly Met Trp His Thr Thr Ser Thr
4896      1445      1450      1455
4898 Leu Thr Gly Gln Leu Asp Asp Ala Asp Arg Asp Arg Ile Arg Arg Gly
4899      1460      1465      1470
4901 Gly Phe Leu Pro Ile Thr Asp Asp Glu Gly
4902      1475      1480
5300 <210> SEQ ID NO: 23
5301 <211> LENGTH: 1509
5302 <212> TYPE: PRT
5303 <213> ORGANISM: Artificial Sequence
5305 <220> FEATURE:
5306 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic PKS
5307      synthase fragment
5309 <400> SEQUENCE: 23
5310 Gln Leu Ala Glu Ala Leu Leu Thr Leu Val Arg Glu Ser Thr Ala Ala
5311      1      5      10      15
5313 Val Leu Gly His Val Gly Gly Glu Asp Ile Pro Ala Thr Ala Ala Phe
5314      20      25      30
5316 Lys Asp Leu Gly Ile Asp Ser Leu Thr Ala Val Gln Leu Arg Asn Ala
5317      35      40      45
5319 Leu Thr Glu Ala Thr Gly Val Arg Leu Asn Ala Thr Ala Val Phe Asp
5320      50      55      60
5322 Phe Pro Thr Pro His Val Leu Ala Gly Lys Leu Gly Asp Glu Leu Thr
5323      65      70      75      80
5325 Gly Thr Arg Ala Pro Val Val Pro Arg Thr Ala Ala Thr Ala Gly Ala
5326      85      90      95

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## RAW SEQUENCE LISTING

DATE: 11/20/2002

PATENT APPLICATION: US/09/940,316

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

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5475 Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu Ala Gln
5476      885      890      895
5478 Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu Gly Thr
5479      900      905      910
5481 Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln His Gln
5482      915      920      925
5484 Arg Tyr Trp Leu Glu Ser Ala Arg Pro Ala Ala Ser Asp Ala Gly His
5485      930      935      940
5487 Pro Val Leu Gly Ser Gly Ile Ala Leu Ala Gly Ser Pro Gly Arg Val
5488 945      950      955      960
5490 Phe Thr Gly Ser Val Pro Thr Gly Ala Asp Arg Ala Val Phe Val Ala
5491      965      970      975
5493 Glu Leu Ala Leu Ala Ala Asp Ala Val Asp Cys Ala Thr Val Glu
5494      980      985      990
5496 Arg Leu Asp Ile Ala Ser Val Pro Gly Arg Pro Gly His Gly Arg Thr
5497      995      1000      1005
5499 Thr Val Gln Thr Trp Val Asp Glu Pro Ala Asp Asp Gly Arg Arg Arg
5500      1010      1015      1020
5502 Phe Thr Val His Thr Arg Thr Gly Asp Ala Pro Trp Thr Leu His Ala
E--> 5503 025      1030      1035      1040
5505 Glu Gly Val Leu Arg Pro His Gly Thr Ala Leu Pro Asp Ala Ala Asp
5506      1045      1050      1055
5508 Ala Glu Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu Pro Gly
5509      1060      1065      1070
5511 Val Trp Arg Arg Gly Asp Gln Val Phe Ala Glu Ala Glu Val Asp Gly
5512      1075      1080      1085
5514 Pro Asp Gly Phe Val Val His Pro Asp Leu Leu Asp Ala Val Phe Ser
5515      1090      1095      1100
5517 Ala Val Gly Asp Gly Ser Arg Gln Pro Ala Gly Trp Arg Asp Leu Thr
E--> 5518 105      1110      1115      1120
5520 Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr Arg Arg
5521      1125      1130      1135
5523 Thr Asp Gly Ala Met Gly Phe Ala Ala Phe Asp Gly Ala Gly Leu Pro
5524      1140      1145      1150
5526 Val Leu Thr Ala Glu Ala Val Thr Leu Arg Glu Val Ala Ser Pro Ser
5527      1155      1160      1165
5529 Gly Ser Glu Glu Ser Asp Gly Leu His Arg Leu Glu Trp Leu Ala Val
5530      1170      1175      1180
5532 Ala Glu Ala Val Tyr Asp Gly Asp Leu Pro Glu Gly His Val Leu Ile
E--> 5533 185      1190      1195      1200
5535 Thr Ala Ala His Pro Asp Asp Pro Glu Asp Ile Pro Thr Arg Ala His
5536      1205      1210      1215
5538 Thr Arg Ala Thr Arg Val Leu Thr Ala Leu Gln His His Leu Thr Thr
5539      1220      1225      1230
5541 Thr Asp His Thr Leu Ile Val His Thr Thr Thr Asp Pro Ala Gly Ala
5542      1235      1240      1245
5544 Thr Val Thr Gly Leu Thr Arg Thr Ala Gln Asn Glu His Pro His Arg
5545      1250      1255      1260
5547 Ile Arg Leu Ile Glu Thr Asp His Pro His Thr Pro Leu Pro Leu Ala

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

E--> 5548 265          1270          1275          1280
5550 Gln Leu Ala Thr Leu Asp His Pro His Leu Arg Leu Thr His His Thr
5551          1285          1290          1295
5553 Leu His His Pro His Leu Thr Pro Leu His Thr Thr Thr Pro Thr
5554          1300          1305          1310
5556 Thr Thr Pro Leu Asn Pro Glu His Ala Ile Ile Ile Thr Gly Gly Ser
5557          1315          1320          1325
5559 Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr
5560          1330          1335          1340
5562 Tyr Leu Leu Ser Arg Thr Pro Pro Pro Asp Ala Thr Pro Gly Thr His
E--> 5563 345          1350          1355          1360
5565 Leu Pro Cys Asp Val Gly Asp Pro His Gln Leu Ala Thr Thr Leu Thr
5566          1365          1370          1375
5568 His Ile Pro Gln Pro Leu Thr Ala Ile Phe His Thr Ala Ala Thr Leu
5569          1380          1385          1390
5571 Asp Asp Gly Ile Leu His Ala Leu Thr Pro Asp Arg Leu Thr Thr Val
5572          1395          1400          1405
5574 Leu His Pro Lys Ala Asn Ala Ala Trp His Leu His His Leu Thr Gln
5575          1410          1415          1420
5577 Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Val
E--> 5578 425          1430          1435          1440
5580 Leu Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Phe Leu
5581          1445          1450          1455
5583 Asp Ala Leu Ala Thr His Arg His Thr Leu Gly Gln Pro Ala Thr Ser
5584          1460          1465          1470
5586 Ile Ala Trp Gly Met Trp His Thr Thr Ser Thr Leu Thr Gly Gln Leu
5587          1475          1480          1485
5589 Asp Asp Ala Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile
5590          1490          1495          1500
5592 Thr Asp Asp Glu Gly
E--> 5593 505
6007 <210> SEQ ID NO: 25
6008 <211> LENGTH: 1574
6009 <212> TYPE: PRT
6010 <213> ORGANISM: Artificial Sequence
6012 <220> FEATURE:
6013 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic PKS
6014      synthase fragment
6016 <400> SEQUENCE: 25
6017 Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
6018 1      5      10      15
6020 Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
6021      20      25      30
6023 Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
6024      35      40      45
6026 Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
6027      50      55      60
6029 Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
6030 65      70      75      80

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

6179 Leu Ala Thr Thr Arg Glu Leu Arg Tyr Asp Arg Pro His Thr Ala Ile
6180 865 870 875 880
6182 Pro Asn Asp Pro Thr Thr Ala Glu Tyr Trp Ala Glu Gln Val Arg Asn
6183 885 890 895
6185 Pro Val Leu Phe His Ala His Thr Gln Arg Tyr Pro Asp Ala Val Phe
6186 900 905 910
6188 Val Glu Ile Gly Pro Gly Gln Asp Leu Ser Pro Leu Val Asp Gly Ile
6189 915 920 925
6191 Ala Leu Gln Asn Gly Thr Ala Asp Glu Val His Ala Leu His Thr Ala
6192 930 935 940
6194 Leu Ala Arg Leu Phe Thr Arg Gly Ala Thr Leu Asp Trp Ser Arg Ile
6195 945 950 955 960
6197 Leu Gly Gly Ala Ser Arg His Asp Pro Asp Val Pro Ser Tyr Ala Phe
6198 965 970 975
6200 Gln Arg Arg Pro Tyr Trp Ile Glu Ser Ala Pro Pro Ala Thr Ala Asp
6201 980 985 990
6203 Ser Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro
6204 995 1000 1005
6206 Gly Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val
6207 1010 1015 1020
6209 Phe Ile Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala
E--> 6210 025 1030 1035 104
6212 Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg
6213 1045 1050 1055
6215 Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly
6216 1060 1065 1070
6218 Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr
6219 1075 1080 1085
6221 Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu
6222 1090 1095 1100
6224 Ala Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly
E--> 6225 105 1110 1115 112
6227 Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu
6228 1125 1130 1135
6230 Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala
6231 1140 1145 1150
6233 Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg
6234 1155 1160 1165
6236 Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu
6237 1170 1175 1180
6239 Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala
E--> 6240 185 1190 1195 120
6242 Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala
6243 1205 1210 1215
6245 Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp
6246 1220 1225 1230
6248 Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu
6249 1235 1240 1245
6251 Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

6252      1250      1255      1260
6254 Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg
E--> 6255 265      1270      1275      128
6257 Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu
6258      1285      1290      1295
6260 Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu
6261      1300      1305      1310
6263 Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu
6264      1315      1320      1325
6266 Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu
6267      1330      1335      1340
6269 His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His
E--> 6270 345      1350      1355      136
6272 Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn
6273      1365      1370      1375
6275 Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser
6276      1380      1385      1390
6278 Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr
6279      1395      1400      1405
6281 Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His
6282      1410      1415      1420
6284 Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr
E--> 6285 425      1430      1435      144
6287 His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu
6288      1445      1450      1455
6290 Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr
6291      1460      1465      1470
6293 Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln
6294      1475      1480      1485
6296 Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr
6297      1490      1495      1500
6299 Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu
E--> 6300 505      1510      1515      152
6302 Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr
6303      1525      1530      1535
6305 Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu
6306      1540      1545      1550
6308 Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile
6309      1555      1560      1565
6311 Ser Asp Asp Glu Gly Met
6312      1570
6722 <210> SEQ ID NO: 27
6723 <211> LENGTH: 1557
6724 <212> TYPE: PRT
6725 <213> ORGANISM: Artificial Sequence
6727 <220> FEATURE:
6728 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic PKS
6729      synthase fragment
6731 <400> SEQUENCE: 27

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

6879 Glu Ala Arg Ala Val Leu Gly Glu Gly Val Glu Ile Ala Ala Val Asn
6880 785 790 795 800
6882 Gly Pro Ser Ser Val Val Leu Ser Gly Asp Glu Ala Ala Val Leu Gln
6883 805 810 815
6885 Ala Ala Glu Gly Leu Gly Lys Trp Thr Arg Leu Ala Thr Ser His Ala
6886 820 825 830
6888 Phe His Ser Ala Arg Met Glu Pro Met Leu Glu Glu Phe Arg Ala Val
6889 835 840 845
6891 Ala Glu Gly Leu Thr Tyr Arg Thr Pro Gln Val Ser Met Ala Val Gly
6892 850 855 860
6894 Asp Gln Val Thr Thr Ala Glu Tyr Trp Val Arg Gln Val Arg Asp Thr
6895 865 870 875 880
6897 Val Arg Phe Gly Glu Gln Val Ala Ser Tyr Glu Asp Ala Val Phe Val
6898 885 890 895
6900 Glu Leu Gly Ala Asp Arg Ser Leu Ala Arg Leu Val Asp Gly Val Ala
6901 900 905 910
6903 Met Leu His Gly Asp His Glu Ile Gln Ala Ala Ile Gly Ala Leu Ala
6904 915 920 925
6906 His Leu Tyr Val Asn Gly Val Thr Val Asp Trp Pro Ala Leu Leu Gly
6907 930 935 940
6909 Asp Ala Pro Ala Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln
6910 945 950 955 960
6912 His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser
6913 965 970 975
6915 Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly
6916 980 985 990
6918 Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe
6919 995 1000 1005
6921 Ile Ala Glu Leu Ala Leu Ala Ala Asp Ala Thr Asp Cys Ala Thr
6922 1010 1015 1020
6924 Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly
E--> 6925 025 1030 1035 104
6927 Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg
6928 1045 1050 1055
6930 Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr Leu
6931 1060 1065 1070
6933 His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala
6934 1075 1080 1085
6936 Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu
6937 1090 1095 1100
6939 Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val
E--> 6940 105 1110 1115 112
6942 Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val
6943 1125 1130 1135
6945 Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp
6946 1140 1145 1150
6948 Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr
6949 1155 1160 1165
6951 Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

6952      1170      1175      1180
6954 Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser
E--> 6955 185      1190      1195      120
6957 Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu
6958'      1205      1210      1215
6960 Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly
6961      1220      1225      1230
6963 Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr
6964      1235      1240      1245
6966 Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val
6967      1250      1255      1260
6969 Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile
E--> 6970 265      1270      1275      128
6972 Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr
6973      1285      1290      1295
6975 Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr
6976      1300      1305      1310
6978 His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His
6979      1315      1320      1325
6981 Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu
6982      1330      1335      1340
6984 Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn Thr
E--> 6985 345      1350      1355      136
6987 Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly
6988      1365      1370      1375
6990 Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr
6991      1380      1385      1390
6993 Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile
6994      1395      1400      1405
6996 Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His
6997      1410      1415      1420
6999 Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp
E--> 7000 425      1430      1435      144
7002 Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu
7003      1445      1450      1455
7005 Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn
7006      1460      1465      1470
7008 Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu
7009      1475      1480      1485
7011 Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp
7012      1490      1495      1500
7014 Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile
E--> 7015 505      1510      1515      152
7017 Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr
7018      1525      1530      1535
7020 Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser
7021      1540      1545      1550
7023 Asp Asp Glu Gly Met
7024      1555

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

7442 <210> SEQ ID NO: 29
7443 <211> LENGTH: 1588
7444 <212> TYPE: PRT
7445 <213> ORGANISM: Artificial Sequence
7447 <220> FEATURE:
7448 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic PKS
7449     synthase fragment
7451 <400> SEQUENCE: 29
7452 Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
7453     1             5             10             15
7455 Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
7456     20             25             30
7458 Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
7459     35             40             45
7461 Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
7462     50             55             60
7464 Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
7465     65             70             75             80
7467 Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
7468     85             90             95
7470 Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
7471     100            105            110
7473 Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
7474     115            120            125
7476 Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
7477     130            135            140
7479 Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
7480 145            150            155            160
7482 Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
7483     165            170            175
7485 Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
7486     180            185            190
7488 Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
7489     195            200            205
7491 Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
7492     210            215            220
7494 Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
7495 225            230            235            240
7497 Ala Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser Trp Glu Ala
7498     245            250            255
7500 Phe Glu Ser Ala Gly Ile Thr Pro Asp Ala Ala Arg Gly Ser Asp Thr
7501     260            265            270
7503 Gly Val Phe Ile Gly Ala Phe Ser Tyr Gly Tyr Gly Thr Gly Ala Asp
7504     275            280            285
7506 Thr Asn Gly Phe Gly Ala Thr Gly Ser Gln Thr Ser Val Leu Ser Gly
7507     290            295            300
7509 Arg Leu Ser Tyr Phe Tyr Gly Leu Glu Gly Pro Ser Val Thr Val Asp
7510 305            310            315            320
7512 Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Gln Ala Gly Gln Ser

```

## RAW SEQUENCE LISTING

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TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

7587 Val Asp Val Val Gln Pro Ala Ser Trp Ala Met Met Val Ser Leu Ala
7588                               725                               730                               735
7590 Ala Val Trp Gln Ala Ala Gly Val Arg Pro Asp Ala Val Ile Gly His
7591                               740                               745                               750
7593 Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ala Val Ser Leu
7594                               755                               760                               765
7596 Arg Asp Ala Ala Arg Ile Val Thr Leu Arg Ser Gln Ala Ile Ala Arg
7597                               770                               775                               780
7599 Gly Leu Ala Gly Arg Gly Ala Met Ala Ser Val Ala Leu Pro Ala Gln
7600 785                               790                               795                               800
7602 Asp Val Glu Leu Val Asp Gly Ala Trp Ile Ala Ala His Asn Gly Pro
7603                               805                               810                               815
7605 Ala Ser Thr Val Ile Ala Gly Thr Pro Glu Ala Val Asp His Val Leu
7606                               820                               825                               830
7608 Thr Ala His Glu Ala Gln Gly Val Arg Val Arg Arg Ile Thr Val Asp
7609                               835                               840                               845
7611 Tyr Ala Ser His Thr Pro His Val Glu Leu Ile Arg Asp Glu Leu Leu
7612                               850                               855                               860
7614 Asp Ile Thr Ser Asp Ser Ser Ser Gln Thr Pro Leu Val Pro Trp Leu
7615 865                               870                               875                               880
7617 Ser Thr Val Asp Gly Thr Trp Val Asp Ser Pro Leu Asp Gly Glu Tyr
7618                               885                               890                               895
7620 Trp Tyr Arg Asn Leu Arg Glu Pro Val Gly Phe His Pro Ala Val Ser
7621                               900                               905                               910
7623 Gln Leu Gln Ala Gln Gly Asp Thr Val Phe Val Glu Val Ser Ala Ser
7624                               915                               920                               925
7626 Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala Thr
7627                               930                               935                               940
7629 Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu Ala
7630 945                               950                               955                               960
7632 Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu Gly
7633                               965                               970                               975
7635 Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln His
7636                               980                               985                               990
7638 Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser Gly
7639                               995                               1000                               1005
7641 His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly Arg
7642                               1010                               1015                               1020
7644 Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe Ile
E--> 7645 025                               1030                               1035                               104
7647 Ala Glu Leu Ala Leu Ala Ala Ala Asp Ala Thr Asp Cys Ala Thr Val
7648                               1045                               1050                               1055
7650 Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly Arg
7651                               1060                               1065                               1070
7653 Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg Arg
7654                               1075                               1080                               1085
7656 Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr Leu His
7657                               1090                               1095                               1100
7659 Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala Val

```



## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

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Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

E--> 7660 105          1110          1115          112
7662 Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu Pro
7663          1125          1130          1135
7665 Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val Asp
7666          1140          1145          1150
7668 Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val Phe
7669          1155          1160          1165
7671 Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp Leu
7672          1170          1175          1180
7674 Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr Arg
E--> 7675 185          1190          1195          120
7677 Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly Met
7678          1205          1210          1215
7680 Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser Ala
7681          1220          1225          1230
7683 Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu Pro
7684          1235          1240          1245
7686 Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly Tyr
7687          1250          1255          1260
7689 Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr Asn
E--> 7690 265          1270          1275          128
7692 Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val Leu
7693          1285          1290          1295
7695 Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile Val
7696          1300          1305          1310
7698 His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr Arg
7699          1315          1320          1325
7701 Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr His
7702          1330          1335          1340
7704 His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His Gln
E--> 7705 345          1350          1355          136
7707 Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu Thr
7708          1365          1370          1375
7710 Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Pro Asn Thr Pro
7711          1380          1385          1390
7713 Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly Thr
7714          1395          1400          1405
7716 Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr Leu
7717          1410          1415          1420
7719 Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile Pro
E--> 7720 425          1430          1435          144
7722 Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His Ile
7723          1445          1450          1455
7725 Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp Asp
7726          1460          1465          1470
7728 Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Leu Gln
7729          1475          1480          1485
7731 Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn Gln
7732          1490          1495          1500

```

## RAW SEQUENCE LISTING

DATE: 11/20/2002

PATENT APPLICATION: US/09/940,316

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

7734 Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu Gly
E--> 7735 505          1510          1515          152
7737 Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala
7738          1525          1530          1535
7740 Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile Ala
7741          1540          1545          1550
7743 Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr Asp
7744          1555          1560          1565
7746 Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser Asp
7747          1570          1575          1580
7749 Asp Glu Gly Met
E--> 7750 585
8164 <210> SEQ ID NO: 31
8165 <211> LENGTH: 1578
8166 <212> TYPE: PRT
8167 <213> ORGANISM: Artificial Sequence
8169 <220> FEATURE:
8170 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic PKS
8171      synthase fragment
8173 <400> SEQUENCE: 31
8174 Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
8175      1          5          10          15
8177 Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
8178          20          25          30
8180 Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
8181          35          40          45
8183 Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
8184          50          55          60
8186 Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
8187      65          70          75          80
8189 Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
8190          85          90          95
8192 Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
8193          100         105         110
8195 Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
8196          115         120         125
8198 Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
8199          130         135         140
8201 Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile
8202      145          150          155          160
8204 Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Ala Ser Pro Gln Glu
8205          165          170          175
8207 Leu Trp Arg Leu Val Ala Ser Gly Thr Asp Ala Ile Thr Glu Phe Pro
8208          180          185          190
8210 Ala Asp Arg Gly Trp Asp Val Asp Ala Leu Tyr Asp Pro Asp Pro Asp
8211          195         200         205
8213 Ala Ile Gly Lys Thr Phe Val Arg His Gly Gly Phe Leu Asp Gly Ala
8214          210         215         220
8216 Thr Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

      8364      1010      1015      1020
8366 Asp Arg Ala Val Phe Ile Ala Glu Leu Ala Leu Ala Ala Asp Ala
E--> 8367 025      1030      1035      104
8369 Thr Asp Cys Ala Thr Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly
8370      1045      1050      1055
8372 Gly Ser Ala Arg Gly Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro
8373      1060      1065      1070
8375 Ala Ala Asp Gly Arg Arg Arg Phe Thr Val His Thr Arg Val Gly Asp
8376      1075      1080      1085
8378 Ala Pro Trp Thr Leu His Ala Glu Gly Val Leu Arg Pro Gly Arg Val
8379      1090      1095      1100
8381 Pro Gln Pro Glu Ala Val Asp Thr Ala Trp Pro Pro Gly Ala Val
E--> 8382 105      1110      1115      112
8384 Pro Ala Asp Gly Leu Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe
8385      1125      1130      1135
8387 Val Glu Ala Glu Val Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp
8388      1140      1145      1150
8390 Leu Leu Asp Ala Val Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro
8391      1155      1160      1165
8393 Thr Gly Trp Arg Asp Leu Ala Val His Ala Ser Asp Ala Thr Val Leu
8394      1170      1175      1180
8396 Arg Ala Cys Leu Thr Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala
E--> 8397 185      1190      1195      120
8399 Phe Asp Gly Ala Gly Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu
8400      1205      1210      1215
8402 Gly Glu Val Ala Ser Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu
8403      1220      1225      1230
8405 Arg Leu Glu Trp Leu Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp
8406      1235      1240      1245
8408 Glu Leu Pro Glu Gly Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp
8409      1250      1255      1260
8411 Pro Asp Asp Pro Thr Asn Pro His Asn Thr Pro Thr Arg Thr His Thr
E--> 8412 265      1270      1275      128
8414 Gln Thr Thr Arg Val Leu Thr Ala Leu Gln His His Leu Ile Thr Thr
8415      1285      1290      1295
8417 Asn His Thr Leu Ile Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala
8418      1300      1305      1310
8420 Val Thr Gly Leu Thr Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile
8421      1315      1320      1325
8423 His Leu Ile Glu Thr His His Pro His Thr Pro Leu Pro Leu Thr Gln
8424      1330      1335      1340
8426 Leu Thr Thr Leu His Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu
E--> 8427 345      1350      1355      136
8429 His Thr Pro His Leu Thr Pro Ile Thr Thr His His Asn Thr Thr Thr
8430      1365      1370      1375
8432 Thr Thr Pro Asn Thr Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile
8433      1380      1385      1390
8435 Thr Gly Gly Ser Gly Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn
8436      1395      1400      1405

```

## RAW SEQUENCE LISTING

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Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

8438 His Pro His Thr Tyr Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr
8439      1410                1415                1420
8441 Pro Gly Thr His Ile Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr
E--> 8442 425                1430                1435                144
8444 Gln Ala Leu Thr His Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr
8445                1445                1450                1455
8447 Ala Ala Thr Leu Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His
8448                1460                1465                1470
8450 Leu Thr Thr Thr Leu Gln Pro Lys Ala Asp Ala Ala Trp His Leu His
8451      1475                1480                1485
8453 His His Thr Gln Asn Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser
8454      1490                1495                1500
8456 Ala Ala Ala Thr Leu Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala
E--> 8457 505                1510                1515                152
8459 Asn Ala Phe Leu Asp Ala Leu Ala Thr His Arg His Thr Gln Gly Gln
8460                1525                1530                1535
8462 Pro Ala Thr Thr Ile Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu
8463                1540                1545                1550
8465 Thr Ser Gln Leu Thr Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly
8466                1555                1560                1565
8468 Phe Leu Pro Ile Ser Asp Asp Glu Gly Met
8469      1570                1575
8891 <210> SEQ ID NO: 33
8892 <211> LENGTH: 1605
8893 <212> TYPE: PRT
8894 <213> ORGANISM: Artificial Sequence
8896 <220> FEATURE:
8897 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic PKS
8898      synthase fragment
8900 <400> SEQUENCE: 33
8901 Met Arg Leu Tyr Glu Ala Ala Arg Arg Thr Gly Ser Pro Val Val Val
8902      1      5      10      15
8904 Ala Ala Ala Leu Asp Asp Ala Pro Asp Val Pro Leu Leu Arg Gly Leu
8905                20      25      30
8907 Arg Arg Thr Thr Val Arg Arg Ala Ala Val Arg Glu Arg Ser Leu Ala
8908                35      40      45
8910 Asp Arg Ser Pro Cys Cys Pro Thr Thr Ser Ala Pro Thr Pro Pro Ser
8911                50      55      60
8913 Arg Ser Ser Trp Asn Ser Thr Ala Thr Val Leu Gly His Leu Gly Ala
8914      65      70      75      80
8916 Glu Asp Ile Pro Ala Thr Thr Thr Phe Lys Glu Leu Gly Ile Asp Ser
8917                85      90      95
8919 Leu Thr Ala Val Gln Leu Arg Asn Ala Leu Thr Thr Ala Thr Gly Val
8920                100     105     110
8922 Arg Leu Asn Ala Thr Ala Val Phe Asp Phe Pro Thr Pro Arg Ala Leu
8923                115     120     125
8925 Ala Ala Arg Leu Gly Asp Glu Leu Ala Gly Thr Arg Ala Pro Val Ala
8926      130      135      140
8928 Ala Arg Thr Ala Ala Thr Ala Ala Ala His Asp Glu Pro Leu Ala Ile

```

## RAW SEQUENCE LISTING

DATE: 11/20/2002

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Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

9076      930      935      940
9078 Ser Pro Val Leu Leu Gln Ala Met Asp Asp Asp Val Val Thr Val Ala
9079 945      950      955      960
9081 Thr Leu Arg Arg Asp Asp Gly Asp Ala Thr Arg Met Leu Thr Ala Leu
9082      965      970      975
9084 Ala Gln Ala Tyr Val His Gly Val Thr Val Asp Trp Pro Ala Ile Leu
9085      980      985      990
9087 Gly Thr Thr Thr Thr Arg Val Leu Asp Leu Pro Thr Tyr Ala Phe Gln
9088      995      1000      1005
9090 His Gln Arg Tyr Trp Leu Glu Ser Ala Pro Pro Ala Thr Ala Asp Ser
9091      1010      1015      1020
9093 Gly His Pro Val Leu Gly Thr Gly Val Ala Val Ala Gly Ser Pro Gly
E--> 9094 025      1030      1035      104
9096 Arg Val Phe Thr Gly Pro Val Pro Ala Gly Ala Asp Arg Ala Val Phe
9097      1045      1050      1055
9099 Ile Ala Glu Leu Ala Leu Ala Ala Asp Ala Thr Asp Cys Ala Thr
9100      1060      1065      1070
9102 Val Glu Gln Leu Asp Val Thr Ser Val Pro Gly Gly Ser Ala Arg Gly
9103      1075      1080      1085
9105 Arg Ala Thr Ala Gln Thr Trp Val Asp Glu Pro Ala Ala Asp Gly Arg
9106      1090      1095      1100
9108 Arg Arg Phe Thr Val His Thr Arg Val Gly Asp Ala Pro Trp Thr Leu
E--> 9109 105      1110      1115      112
9111 His Ala Glu Gly Val Leu Arg Pro Gly Arg Val Pro Gln Pro Glu Ala
9112      1125      1130      1135
9114 Val Asp Thr Ala Trp Pro Pro Pro Gly Ala Val Pro Ala Asp Gly Leu
9115      1140      1145      1150
9117 Pro Gly Ala Trp Arg Arg Ala Asp Gln Val Phe Val Glu Ala Glu Val
9118      1155      1160      1165
9120 Asp Ser Pro Asp Gly Phe Val Ala His Pro Asp Leu Leu Asp Ala Val
9121      1170      1175      1180
9123 Phe Ser Ala Val Gly Asp Gly Ser Arg Gln Pro Thr Gly Trp Arg Asp
E--> 9124 185      1190      1195      120
9126 Leu Ala Val His Ala Ser Asp Ala Thr Val Leu Arg Ala Cys Leu Thr
9127      1205      1210      1215
9129 Arg Arg Asp Ser Gly Val Val Glu Leu Ala Ala Phe Asp Gly Ala Gly
9130      1220      1225      1230
9132 Met Pro Val Leu Thr Ala Glu Ser Val Thr Leu Gly Glu Val Ala Ser
9133      1235      1240      1245
9135 Ala Gly Gly Ser Asp Glu Ser Asp Gly Leu Leu Arg Leu Glu Trp Leu
9136      1250      1255      1260
9138 Pro Val Ala Glu Ala His Tyr Asp Gly Ala Asp Glu Leu Pro Glu Gly
E--> 9139 265      1270      1275      128
9141 Tyr Thr Leu Ile Thr Ala Thr His Pro Asp Asp Pro Asp Asp Pro Thr
9142      1285      1290      1295
9144 Asn Pro His Asn Thr Pro Thr Arg Thr His Thr Gln Thr Thr Arg Val
9145      1300      1305      1310
9147 Leu Thr Ala Leu Gln His His Leu Ile Thr Thr Asn His Thr Leu Ile
9148      1315      1320      1325

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:11

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

```

9150 Val His Thr Thr Thr Asp Pro Pro Gly Ala Ala Val Thr Gly Leu Thr
9151      1330                      1335                      1340
E--> 9153 Arg Thr Ala Gln Asn Glu His Pro Gly Arg Ile His Leu Ile Glu Thr
      9154 345                      1350                      1355                      136
9156 His His Pro His Thr Pro Leu Pro Leu Thr Gln Leu Thr Thr Leu His
9157                      1365                      1370                      1375
9159 Gln Pro His Leu Arg Leu Thr Asn Asn Thr Leu His Thr Pro His Leu
9160                      1380                      1385                      1390
9162 Thr Pro Ile Thr Thr His His Asn Thr Thr Thr Thr Thr Pro Asn Thr
9163                      1395                      1400                      1405
9165 Pro Pro Leu Asn Pro Asn His Ala Ile Leu Ile Thr Gly Gly Ser Gly
9166      1410                      1415                      1420
9168 Thr Leu Ala Gly Ile Leu Ala Arg His Leu Asn His Pro His Thr Tyr
E--> 9169 425                      1430                      1435                      144
9171 Leu Leu Ser Arg Thr Pro Pro Pro Pro Thr Thr Pro Gly Thr His Ile
9172                      1445                      1450                      1455
9174 Pro Cys Asp Leu Thr Asp Pro Thr Gln Ile Thr Gln Ala Leu Thr His
9175                      1460                      1465                      1470
9177 Ile Pro Gln Pro Leu Thr Gly Ile Phe His Thr Ala Ala Thr Leu Asp
9178                      1475                      1480                      1485
9180 Asp Ala Thr Leu Thr Asn Leu Thr Pro Gln His Leu Thr Thr Thr Leu
9181      1490                      1495                      1500
9183 Gln Pro Lys Ala Asp Ala Ala Trp His Leu His His His Thr Gln Asn
E--> 9184 505                      1510                      1515                      152
9186 Gln Pro Leu Thr His Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Leu
9187                      1525                      1530                      1535
9189 Gly Ser Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp
9190                      1540                      1545                      1550
9192 Ala Leu Ala Thr His Arg His Thr Gln Gly Gln Pro Ala Thr Thr Ile
9193                      1555                      1560                      1565
9195 Ala Trp Gly Met Trp His Thr Thr Thr Thr Leu Thr Ser Gln Leu Thr
9196      1570                      1575                      1580
9198 Asp Ser Asp Arg Asp Arg Ile Arg Arg Gly Gly Phe Leu Pro Ile Ser
E--> 9199 585                      1590                      1595                      160
9201 Asp Asp Glu Gly Met
9202                      1605

```

## VERIFICATION SUMMARY

PATENT APPLICATION: US/09/940,316

DATE: 11/20/2002

TIME: 11:24:13

Input Set : D:\30062-20026.txt

Output Set: N:\CRF4\11192002\I940316.raw

L:16 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:2519 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1  
L:3448 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:17  
M:332 Repeated in SeqNo=17  
L:4135 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:19  
M:332 Repeated in SeqNo=19  
L:4818 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:21  
M:332 Repeated in SeqNo=21  
L:5503 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:23  
M:332 Repeated in SeqNo=23  
L:6210 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:25  
M:332 Repeated in SeqNo=25  
L:6925 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:27  
M:332 Repeated in SeqNo=27  
L:7645 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:29  
M:332 Repeated in SeqNo=29  
L:8367 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:31  
M:332 Repeated in SeqNo=31  
L:9094 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:33  
M:332 Repeated in SeqNo=33